Detecting and eliminating computer viruses

VERSION
6.0

Has your computer caught a virus? If it's emitting unusual sounds or displaying unexpected messages, chances are good that it has. But the symptoms of a computer virus aren't always so obvious. Some viruses infect your system and spread without making their presence known. They can do damage to files or disks before you realize your system has been infected.

A computer virus is a program that replicates and invades disks, files, or programs. Depending on what type of virus it is, it can infect your system in one of three ways, as Table A shows.

In versions of DOS prior to DOS 6, the only way to protect your system from computer viruses is through a third-party utility, such as McAfee's Anti-Virus Tools. However, the latest version of DOS comes with Anti-Virus, a built-in utility that can detect and eliminate more than 800 computer viruses. DOS 6 also comes with VSAFE, a program that monitors your computer and warns you when it detects a change that a virus might have caused. (For details on using VSAFE, read "Tracing a Virus in Its Earliest Stage," on page 3.) In this article, we'll show you how to scan your system for viruses and eliminate them by using DOS 6's Anti-Virus.

A bootable disk—your first line of defense

As a general rule, you should always have on hand a floppy disk you can boot from by using the A: drive. This bootable disk will enable you to start your system if your hard drive fails or any of your system files become corrupted or deleted. If a virus damages your hard drive or system files, you'll probably need a bootable disk to start your system. Obviously, you want to create the bootable disk before your system becomes infected.

To create a bootable disk, insert an unformatted floppy disk in the A: drive, type

```
C:\>format a: /s
```

and press [Enter]. The /S switch copies the system files COMMAND.COM, IO.SYS, and MSDOS.SYS to the floppy and enables the disk to start up the system. At the prompt, insert the diskette and press [Enter].

Table A: *Types of computer viruses*

Type of virus	How it affects your system
Boot sector	Replaces a disk's boot sector with its own and loads the virus into memory. (The boot sector controls how your operating system starts up when you turn on your computer.) Once the virus is loaded into memory, it can spread to other disks.
File infector	Adds virus code to executable program files. When you run an infected program, you activate the virus, allowing it to spread to other program files.
Trojan horse	Disguises itself as a legitimate program but can potentially damage your computer when you run it. A Trojan horse virus is more likely to damage files and disks than a boot sector or file infector virus. It can render the files and disks it infects unrecoverable.

IN THIS ISSUE

When formatting is complete and DOS prompts you for a volume label, type something like *BOOT_DISK* and press [Enter].

Finally, copy the Anti-Virus files to the bootable disk to ensure you have uncorrupted copies, should the copies on your system become damaged. To copy these files, type

```
C:\>copy c:\dos\msav*.* a:
```

and press [Enter].

Scanning your system for viruses

To protect your system from viruses, Anti-Virus scans your computer's memory and disk drives. You activate Anti-Virus by typing

```
C:\>msav
```

and pressing [Enter]. When you do, the Anti-Virus Main Menu appears, as shown in Figure A. The easiest way to select an option from the Main Menu is to press an arrow key (↑, →, ↓, or ←) on the keyboard to highlight the option and then press [Enter].

Selecting a drive to scan

Statistics for the current drive appear in the lower-right corner of the Main Menu. Anti-Virus will scan the current drive unless you choose the Select New Drive op-

tion. When you select this option, icons for your hard drive and each floppy drive appear in the top-left corner of the screen. You select a drive by highlighting its icon and pressing [Enter].

Figure A
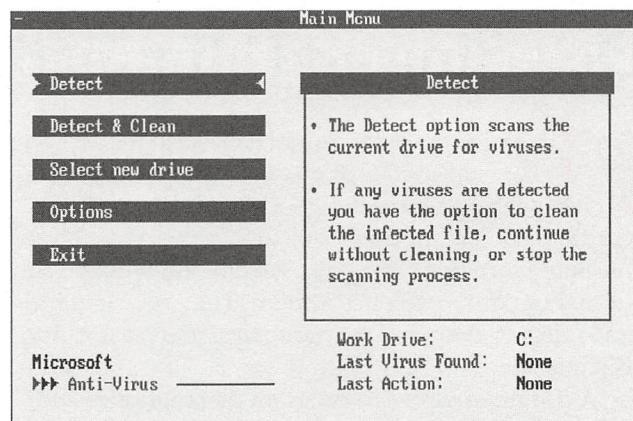
Anti-Virus is a menu-driven utility.

Isolating viruses

Once you've selected a drive to scan, you can begin the search for viruses in one of two ways: You can select the Detect option, or you can choose Detect & Clean.

Tracing a virus in its earliest stage

In "Detecting and Eliminating Computer Viruses," we show you how Anti-Virus can scan your system for viruses and remove any that it finds. Once you're sure your system is virus free, VSAFE—a memory-resident program new to DOS 6—can monitor it for any changes that might indicate a newly acquired virus.

To load VSAFE into memory, you simply type

```
C:\>vsafe
```

and press [Enter]. When you do, DOS responds

```
        VSafe (tm)

     Copyright (c) 1991-1993
   Central Point Software, Inc.
   Hotkey:      <Alt><V>
```

```
VSafe successfully installed.
VSafe is using xK of conventional memory,
             yK of XMS memory,
             zK of EMS memory.
```
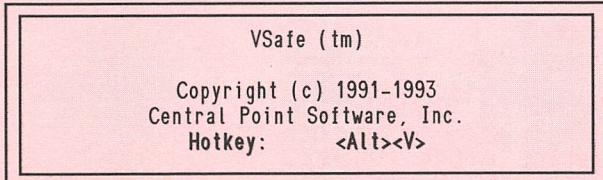
You can load VSAFE into memory every time you turn on your computer by adding the VSAFE command to the end of your AUTOEXEC.BAT file.

By default, VSAFE loads using the settings marked in the VSafe Warning Options screen shown in Figure A. Once you've loaded VSAFE, you can change the settings. First, you press [Alt]V to display the VSafe Warning Options screen. Then, you press the numbers corresponding to the options you want to toggle on or off. Table A describes each setting. Finally, you press [Esc] to return to the command prompt.

Figure A

```
                VSafe Warning Options

   |   | Warning type             | ON |
   | 1 | HD Low level format      | X  |
   | 2 | Resident                 |    |
   | 3 | General write protect    |    |
   | 4 | Check executable files   | X  |
   | 5 | Boot sector viruses      | X  |
   | 6 | Protect HD boot sector   | X  |
   | 7 | Protect FD boot sector   |    |
   | 8 | Protect executable files |    |

   Press 1-8 toggle ON/OFF

   Press <ESC> to Exit

   Press ALT-U to unload from memory
```

The VSafe Warning Options screen lets you decide how you want to monitor your system for viruses.

Table A: *Descriptions of VSafe Warning Options*

Option	Description
HD Low level format	Warns against formatting that could erase your hard disk.
Resident	Signals when a program attempts to stay resident in memory by using standard MS-DOS methods. (Warnings don't necessarily indicate a virus.)
General write protect	Stops programs from writing to the disk. (Useful if you suspect a program is infected.)
Check executable files	Monitors programs that DOS opens.
Boot sector viruses	Looks for boot sector viruses on disks.
Protect HD boot sector	Warns against attempts to write to the hard disk boot sector and partition table.
Protect FD boot sector	Warns against attempts to write to a floppy disk boot sector.
Protect executable files	Signals attempts to modify executable files.

The Detect option scans the selected drive for viruses and stops to display the Virus Found dialog box, shown in Figure B, each time it detects a virus. This dialog box displays the name of the virus and its location. At this point, you can remove the virus by selecting Clean, bypass the virus and continue the search by selecting Continue, or end the search without removing the virus by choosing Stop.

Figure B

```
 ─                    Virus Found
  Disk is infected by the Michelangelo virus.

     ►Clean ◄       Continue        Stop
```
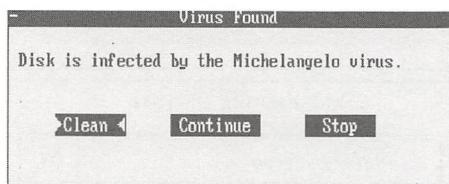
When you select the Detect option, Anti-Virus alerts you when it finds a virus and lets you decide the fate of the virus.

The Detect & Clean option finds and destroys any viruses on the selected drive without pausing to offer you other options. If you aren't interested in knowing which viruses infected your system, this is the option to choose. However, choosing the Detect option lets you note the name of any viruses found on your system and find out more about them (read "Getting to Know Your Viruses," on page 5).

Regardless of which scanning option you choose, Anti-Virus displays a status report similar to the one shown in Figure C once it finishes scanning the selected drive. This report tells you

- how many disks and files Anti-Virus checked, classified by type

- how many of those disks and files were infected with viruses

- how many of the infected disks and files Anti-Virus cleaned

- how long the scanning process took

After reviewing the status report, you press [Enter] to return to the Main Menu. To end the Anti-Virus program, you select Exit.

Running Anti-Virus at startup

While checking your system for viruses on a regular basis is a good idea, it's one of those tasks that falls into the same category as backing up files—you probably won't do it as often as you should, if you do it at all. Fortunately, there's an easier way to check your system for viruses than by selecting options from Anti-Virus'

menu-driven program. You can automatically run Anti-Virus every time you turn on your computer simply by adding the line

```
msav /p
```

to the end of your AUTOEXEC.BAT file. (If you're on a network, add the /L switch to this line to limit scanning to local drives.) Once you do, every time you turn on your computer, it will run through its normal startup routine and then execute an automatic run of Anti-Virus:

```
Microsoft Anti-Virus
Copyright (c) 1992-1993 Central Point Software, Inc.


Microsoft
►►►Anti-Virus ────────────────

Mapping disk directories...
Scanning memory for viruses...
Scanning files for viruses...
C:\dir path\filename

Total boot sector viruses    FOUND  : x
Total boot sector viruses    REMOVED: x

Total Files                  CHECKED: y
Total File viruses           FOUND  : z
Total File viruses           REMOVED: z
```

Figure C

Viruses Detected and Cleaned			
	Checked	Infected	Cleaned
Hard disks :	0	0	0
Floppy disks :	1	1	0
Total disks :	1	1	0
COM Files :	7	0	0
EXE Files :	4	0	0
Other Files :	17	0	0
Total Files :	28	0	0
Scan Time :	00:00:50		
			► OK ◄

When Anti-Virus finishes scanning the selected drive, it summarizes its findings and actions in a status report.

Conclusion

Viruses are your computer's worst enemy, so doing whatever you can to detect and eliminate them as quickly as possible makes sense. Using DOS 6's built-in Anti-Virus utility will help ensure your computer gets a clean bill of health. ■

Getting to know your viruses

As we mention in "Detecting and Eliminating Computer Viruses," on page 1, Anti-Virus can detect over 800 viruses. You can view a list of these viruses by pressing [F9] after typing *msav* to run the Anti-Virus program. When you do, the Virus List dialog box shown in Figure A appears on your screen.

Figure A
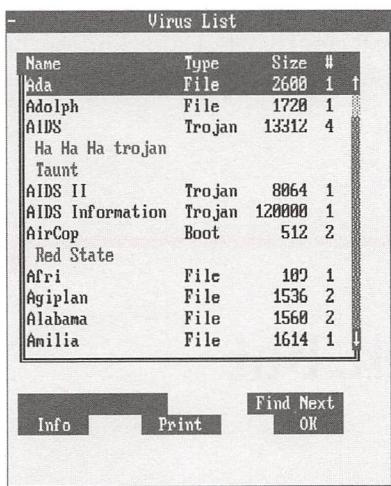
The Virus List dialog box lists the common names, aliases, types, sizes, and number of strains of the viruses Anti-Virus recognizes.

This dialog box lists the common name of each virus, with known aliases indented below it. The dialog box also indicates the type of virus (boot sector, file infector, or Trojan horse), the size of the virus code (in bytes), and the number of known strains or variants. When you open this dialog box, the cursor appears in a blank text box below the main list box. To see statistics on a particular virus, you simply type the virus' name in the text box.

When you want detailed information about a virus, you highlight its name by pressing ↑ or ↓. Then, you press [Tab] to select the Info button and press [Enter] to display the Virus Characteristics dialog box, shown in Figure B. This dialog box restates the size of the selected virus, describes how the virus infects a system, and reveals any side effects of the virus. To close this dialog box and return to the Virus List, you press [Enter]. Then, to return to the Anti-Virus Main Menu, you press [Tab] until the OK button appears highlighted and press [Enter] again.

Keeping up with new viruses

Since new viruses are constantly cropping up, there isn't any quick and easy way to immunize your computer against them completely. However, you can protect your computer from new viruses by ordering Anti-Virus updates from Microsoft. Each update costs $9.95 (US) plus tax. See the last page of the DOS 6 manual for details and an order form.

Figure B
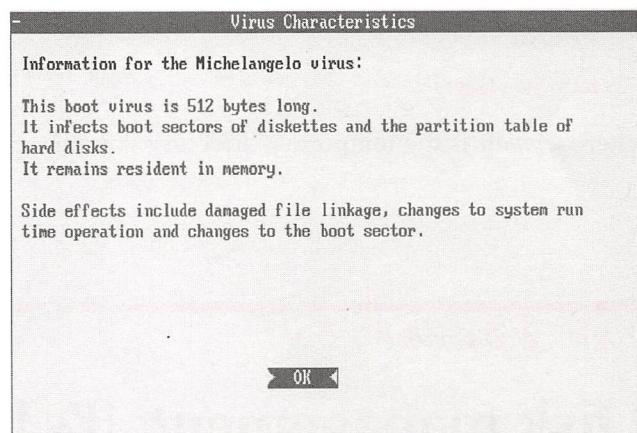
The Virus Characteristics dialog box provides detailed information about the selected virus.

While you're waiting for your Anti-Virus updates, you can obtain new virus signatures to help Anti-Virus detect new viruses. A virus signature is a unique series of hexadecimal codes that identifies a virus. As new viruses are discovered, the Central Point Software Online Support Center posts their signatures. You can download these signatures from this bulletin board.

Before logging on to the Central Point bulletin board, change your communications settings to

- 8 data bits

- no parity

- 1 stop bit

- any speed up to 9600 baud

Next, dial (503) 531-8100.

The first prompt will ask you if you want to display ANSI graphics. Press Y if you do or N if you don't; then press [Enter]. Now, if you already have a user identification code and password, enter them at the next two prompts, respectively. If you don't, type *new* at the first prompt and follow the instructions to set up a user identification code and password.

Next, a list of options will appear. From this list, choose option D (DOS Signatures) and press [Enter].

Doing so selects the DOSAV.EXE file to download. When the list of download protocols appears, select one that your modem supports and again press [Enter]. After downloading is complete, the original list of options reappears. Press X, then [Enter], and finally Y to exit the bulletin board.

DOSAV.EXE is a self-extracting file containing the VIRSIGS.MS file (the actual virus signature file) and the DOSAV.TXT file (an instructional text file). Once you've downloaded DOSAV.EXE, create a temporary directory and then type

```
C:\>dosav c:\tempdir
```

where *tempdir* is the temporary directory you just created. This command explodes the VIRSIGS.MS and DOSAV.TXT files and stores them in the temporary directory.

Now, copy the VIRSIGS.MS file to the C:\DOS directory. Then, press [Ctrl][Alt][Del] to reboot your computer and make the new virus signatures available to the VSAFE program. Finally, type *msav* to run Anti-Virus. When you do, the Virus List automatically updates.

A word of warning

Keep in mind that downloading new virus signatures enables Anti-Virus and VSAFE to *detect* new viruses but not to *remove* them. To detect and eliminate new viruses, you must install Microsoft's Anti-Virus updates. ■

VAN WOLVERTON

Disk management: It's high tech, but it's still housekeeping

Suppose you're sitting at home, comfortably settled into a good book or a movie on TV, when the phone rings—it's your Aunt Sally. She (and the whole family) are just passing through and will be by the house in 15 minutes, and you haven't picked up or dusted for two weeks. (Dusted?) Or maybe you've let the dishes pile up for a few days (that research project barely leaves enough time to cook, let alone wash dishes), only to find that you need the bowl and pan that are somewhere toward the bottom of the pile.

If these occurrences aren't part of your experience, you can safely skip to the rest of this issue, which is probably more relevant to your needs. But if these events sound familiar, perhaps you can relate to the problem of a hard disk, cluttered with a couple thousand files, that's getting perilously close to being full. (Or maybe you have a friend who has mentioned the problem. . . .)

It's probably more accurate (but less compelling) to compare the problem of a cluttered hard disk to unorganized paper files rather than to dusting or doing dishes. It's all too easy to let filing pile up, to take files out and leave them lying around, to keep cramming more and more papers into a file folder instead of breaking the subject into smaller, more manageable topics. Keep it up, and it gets harder and harder to find the document you want—pretty soon, the file drawers are full and you have to do something.

Sooner or later, we all reach that saturation point with our hard disk. It can happen at a critical time—when we're trying to save the revised version of a long, important document that represents hours of work, for example—but no matter when the disk fills, we're forced to make room by deleting files. Unfortunately, the more hastily we purge files, the more apt we are to delete a file we'd prefer to keep.

The best way to avoid the problem, of course, is to do our housekeeping—to delete unneeded files periodically, archive those we probably won't use again but should keep on file, and look for directories that contain too many files and should be divided into subdirectories. But whether we're doing our regular housekeeping or just making enough space to finish an important job, DOS offers some useful tools.

The DOS Shell speeds up housekeeping

If you're going to work with more than a handful of files, fire up the DOS Shell. It's much easier to pick files from a list and either drag them with the mouse, as shown in Figure A, or press the [Del] key than it is to type the commands necessary to accomplish the same task. It also seems a bit safer: The Shell prompts you for confirmation before copying, moving, or deleting files (unless you've

instructed it not to), and seeing filenames makes it less likely that you'll delete a file by mistake. The Shell can even protect you against the hidden danger of losing a file by copying or moving another on top of it.

Figure A
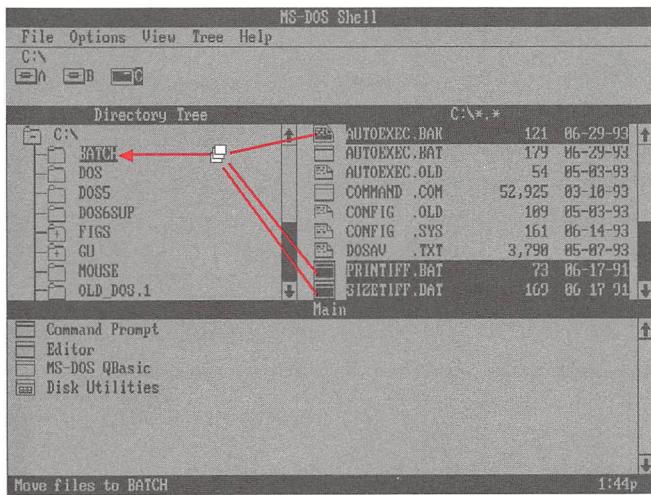
The DOS Shell lets you copy, move, or delete files by using the mouse.

If you're using Version 5, the Shell is the only way to move a file without having to copy it and then delete the original. Even in Version 6, it's simpler to highlight a series of files and drag them to their new home than it is to type the commands. Again, the ability to see the names of the files you're moving and the name of the target directory seems to reduce the chance of error. And if you're rearranging your directory structure, the Directory Tree display in the Shell gives you a picture to work with, making it much easier to keep track of what you're doing and where you are.

The DOS 6 MOVE and DELTREE commands help manage files

Some of the new commands in DOS 6 are specifically intended to ease the job of working with files. When you're upgrading to a new version of a program, for example, you can install the new version in a different directory, use the MOVE command to move the data files (such as documents or spreadsheets) to the new directory, and then use the DELTREE command to delete the directory containing the old version, including any subdirectories. For instance, suppose you installed a new version of Microsoft Word in the WORD6 directory. To move all the documents in your WORD directory (files with DOC extensions) to the WORD6 directory and then delete the WORD directory, you'd type

```
C:\>move c:\word\*.doc c:\word6
C:\>deltree c:\word
```

(There are times when you won't want to follow this strategy, of course; when you upgrade to a new version of Windows, for example, you'll want to install the new version in the same directory to keep all the settings in your INI files.)

The MOVE command is a great time-saver. Not only can you use it to move a file in one step, you can also use MOVE to change the name of a directory, something you couldn't do before DOS 6. (See "Renaming Directories in DOS 6," on page 12.) Be cautious when using DELTREE, however; it has the potential to be the most destructive DOS command since FORMAT was tamed a few versions ago. Whenever you type a DELTREE command, make certain you know what it will do before you press [Enter]. (To learn how to make DELTREE safer, see "Redefining Commands with DOSKEY," in the July 1993 *Inside DOS*.)

The humble DIR command locates files quickly

Knowing how to use the options of the DIR command can speed your file housekeeping. For example, suppose you want to delete the BAK files created by programs like Microsoft Word. You can find all the BAK files on your hard disk with one command:

```
dir \*.bak /s /b
```

The /S parameter tells DOS to check all subdirectories, and since you specified the root directory (the backslash in *.bak), the command searches every subdirectory on the disk. The /B parameter limits the output of the command to one line per file consisting of nothing but the path and filenames. If you suspect there are more than 20 or so BAK files, you can redirect the output to a file and print it to see all the names.

If you want to free a lot of space, you'll want to look for large files. The following DIR command lists the files in every subdirectory on the disk, displayed in reverse order of their size—in other words, the largest files appear first:

```
dir \ /s /a-d /o-s /p
```

The /A-D parameter omits directories from the output, and the /O-S parameter orders the files by reverse size (largest first). The /P parameter pauses the output after each screenful.

Some of the new commands in DOS 6 are specifically intended to ease the job of working with files.

Using DEFRAG to tidy up

After you've completed a bout of housekeeping on your hard disk, you can speed things up a bit by using the DEFRAG command to pack the files together:

```
C:\>defrag c:
```

If your hard disk is several hundred megabytes and contains several thousand files and you've never defragmented it, the process could take up to an hour or so. More than likely, however, the process will take 10 or 15 minutes at most. Once you've defragmented your disk, it takes only a few minutes to do so again. You can keep your system running in top form by using DEFRAG once a week or so.

Disk housekeeping isn't any more fun than house housekeeping, but the payoff is the same: If you keep it up on a regular basis, you can avoid crises. DOS, especially with the additions in Version 6, gives you a good complement of disk housekeeping tools. ■

Contributing editor Van Wolverton is the author of the best-selling books Running MS-DOS 5 *and* Supercharging MS-DOS. *Van, who has worked for IBM and Intel, currently lives in Alberton, Montana.*

Playing with colors in the DOS Shell

Bruce E. Broski of Lakewood, Ohio, wrote to Inside DOS *to find out how to modify the colors in the DOS Shell. His letter inspired this article.*

In "Customizing the DOS Shell Screen" (July 1993), we explained how to select one of Shell's built-in color schemes. Since Shell offers only eight built-in color schemes, you might not find one you're perfectly happy with. Fortunately, you can modify the existing color schemes or even create one of your own. However, you can't do it directly in the DOS Shell.

Figure A

To edit the DOSSHELL.INI file, you open the file in the DOS Editor.

To edit or create a Shell color scheme, you must edit the Shell's initialization file—DOSSHELL.INI. Start by double-clicking Editor in the Main window of the DOS Shell. When the File To Edit dialog box appears, type *c:\dos\dosshell.ini* and click OK or press [Enter]. If you stored DOSSHELL.INI in a directory other than the DOS directory, make sure you enter the complete directory path.

Figure B

The color = *header marks the section of the DOSSHELL.INI file that controls Shell's color schemes.*

The Editor window will open with the file shown in Figure A. Once it does, issue the Find… command from

the Search menu. When the Find dialog box opens, type *color* in the Find What text box. Then, click the Whole Word check box and click OK. Doing so will locate the color section of the DOSSHELL.INI file, which controls the Shell's color schemes. At this point, your screen will look similar to Figure B.

Figure C

```
selection =
{
  title = Ocean
  foreground =
  {
        base = black
        highlight = brightwhite
        selection = brightwhite
        alert = brightwhite
        menubar = black
        menu = black
        disabled = white
        accelerator = brightwhite
        dialog = black
        button = black
        elevator = white
        titlebar = black
        scrollbar = brightwhite
        borders = black
        drivebox = black
        driveicon = black
        cursor = black
  }
  background =
  {
        base = brightwhite
        highlight = blue
        selection = black
        alert = white
        menubar = cyan
        menu = cyan
        disabled = cyan
        accelerator = cyan
        dialog = cyan
        button = brightwhite
        elevator = white
        titlebar = white
        scrollbar = black
        borders = black
        drivebox = brightwhite
        driveicon = brightwhite
        cursor = brightcyan
  }
}
```

Each color scheme definition consists of a selection = *header, a title definition, and specifications for foreground and background colors.*

The color section consists of eight subsections, each of which defines one of Shell's built-in color schemes. The subsection that defines the Ocean color scheme appears in Figure C. Each subsection begins with the *selection =* header followed by a title defini-

Table A: *Color options for Shell color schemes*

Color	Description
black	dark gray
brightblack	true black
blue	royal blue
brightblue	periwinkle blue
brown	tannish brown
cyan	teal blue
brightcyan	aquamarine
green	lime green
brightgreen	pistachio green
magenta	purple
brightmagenta	lavender pink
red	brick red
brightred	orange red
white	light gray
brightwhite	true white
brightyellow	lemon yellow

tion. After the title definition, you'll see color specifications listed for elements in the foreground and then color specifications listed for the same elements in the background.

To change the color of a particular element, you simply delete the currently specified color and replace it with one of the colors listed in Table A. For instance, to change the background color in the Ocean color scheme from a bright white to a plain white, you edit the line *base = brightwhite* in the background definition to read *base = white*. Table B on page 10 lists each element you can define a color for.

To create a new color scheme, you add a new subsection with a new title and color specifications for each screen element. You can easily do so by copying and editing an existing color scheme definition. To copy a color scheme definition, you highlight it and issue the Copy command from the Edit menu. Then, you position the cursor on the line below the last color scheme definition and issue the Paste command from the Edit menu. Next, you change the title definition and reassign colors to each screen element.

Let's say you want to create a color scheme called Watermelon. Start by highlighting the Ocean color scheme definition shown in Figure C. (Make sure you include the two closing braces at the end of the definition.) Then, issue the Copy command from the Edit menu.

Next, you have to find the end of the last color scheme definition. Since the color section immediately

Table B: *Shell screen elements*

	Element	Description		Element	Description
F O R E G R O U N D	base	text in each window	**B A C K G R O U N D**	base	background of each window
	highlight	selected text in active window		highlight	background of selected text in active window
	selection	selected text in nonactive windows		selection	background of selected text in nonactive windows
	alert	text of warning messages		alert	background of warning messages
	menubar	text of menu names		menubar	background of menu bar
	menu	text of selectable menu items		menu	background of menu
	disabled	text of unselectable menu items		disabled	background of unselectable menu items
	accelerator	letter you can press to select a menu item		accelerator	background of letter you can press to select a menu item
	dialog	text in dialog boxes		dialog	background of dialog boxes
	button	text on buttons in dialog boxes		button	buttons in dialog boxes
	elevator	no foreground effect		elevator	location indicator in scroll bar
	titlebar	text of inactive window title bars		titlebar	background of inactive window title bars
	scrollbar	no foreground effect		scrollbar	scroll bar
	borders	menu bar and drive area borders		borders	title bar, scroll bar, and window borders
	drivebox	foreground of drive icons		drivebox	background of drive area
	driveicon	letter beside inactive drive icons		driveicon	background of letter beside inactive drive icons
	cursor	text the cursor is on (in text mode only)		cursor	cursor (in text mode only)

Table C: *Watermelon color scheme*

```
selection =
{
  title = Watermelon
  foreground =
  {
        base = brightblack
        highlight = brightblack
        selection = brightblack
        alert = brightred
        menubar = brightwhite
        menu = brightwhite
        disabled = black
        accelerator = brightred
        dialog = brightred
        button = brightblack
        elevator = brightred
        titlebar = green
        scrollbar = brightblack
        borders = green
        drivebox = green
        driveicon = green
        cursor = green
  }
  background =
  {
        base = brightwhite
        highlight = green
        selection = brightred
        alert = brightgreen
        menubar = brightred
        menu = brightred
        disabled = brightwhite
        accelerator = brightwhite
        dialog = brightwhite
        button = brightred
        elevator = brightred
        titlebar = brightgreen
        scrollbar = green
        borders = brightred
        drivebox = brightred
        driveicon = brightred
        cursor = green
  }
}
```

precedes a section with the header *associations =*, you can locate the end by searching for this header. To do so, issue the Find… command from the Search menu and type *associations* in the Find What text box. Then, click the Whole Word check box and click OK. When the search finds *associations*, you'll see a closing brace on each of the three preceding lines. The brace on the middle line marks the end of the last color scheme definition. Since you want to paste the copied color scheme definition on the line below the last definition, place the cursor at the beginning of the line with the third brace. Then issue the Paste command from the Edit menu.

Now you're ready to edit the copied color scheme. Start by replacing *Ocean* in the title definition with *Watermelon*. Then, make the color assignments shown in Table C for each screen element.

To save revised or newly created color schemes, issue the Exit command from the File menu. When the Editor prompts you to save changes, click Yes. In addition to saving the edited DOSSHELL.INI file, doing so will close the DOS Editor and return you to the Shell. Now you can select a newly created color scheme or view a revised color scheme by issuing the Colors… command from the Options menu.

A DOS 6 version of BACKUP

For years, I've used the following batch file to back up a small group of files so I could transfer them from one PC to another:

```
@echo off
for %%b in (C:\DBXL\ENGINES.DBF C:\DBXL\LOG8045.DBF
C:\DBXL\COMPNT.DBF) do backup %%b a:/a/m
```

I used the batch file as a command-line DOS call from a dBASE-type PRG file. The batch file uses the BACKUP command because this command can spread a single file across two diskettes.

However, I've recently upgraded to DOS 6, which no longer supports the BACKUP command. The new menu-driven MSBACKUP in DOS 6 won't work in my batch file. Is there another single-line command or batch file I can use in DOS 6 that can be called from a dBASE-type PRG file, copy approximately 2 Mb of DBF files to one or two 5.25" diskettes, and spread a single file over two diskettes?

Dale Morton
Birmingham, Alabama

As Mr. Morton discovered, one of the most common problems that occurs when you upgrade to a new version of DOS is batch files created in the older version won't always work. A batch file is a great tool for backing up files that frequently change. Unfortunately, DOS 5's BACKUP command doesn't work in DOS 6. However, a DOS 6 version of BACKUP—BACKUP.EXE—is available on the MS-DOS 6 Supplemental Disk. You'll find BACKUP.EXE in a file called DOS6SP.EXE in Library 1 of CompuServe's Microsoft DOS forum or on Microsoft Download—(206) 936-6735.

If you don't have a CompuServe account or access to Microsoft Download, you can order the Supplemental Disk directly from Microsoft for $5 plus sales tax and freight charges. The MS-DOS 6 manual contains an order form on the next-to-last page.

The Supplemental Disk also contains other commands available in earlier versions of DOS, such as ASSIGN, COMP, CV, EDLIN, EXE2BIN, GRAFTABLE, JOIN, MIRROR, MSHERC, and PRINTFIX. RESTORE, the command you use to uncompress files you've compressed using BACKUP, comes in the C:\DOS directory of DOS 6.

PATH doesn't automatically include the root directory

Since I run a lot of applications and don't have enough room in my PATH definition to include all the program directories, I created a batch file that I thought would run the selected program from any directory. The batch file switches to the appropriate program directory and issues the command to start the selected program. I included several programs in the batch file, so I stored it in the root directory. The batch file works when I run it from the root directory, but when I try to run it from any other directory, I get a *File not found* error. Do you know why my batch file runs only from the root directory?

Mark Kimbell
Louisville, Kentucky

The reason Mr. Kimbell's batch file runs only from the root directory is probably that he didn't include this directory in his PATH definition. Although it seems logical

that DOS would automatically check the root directory when it looks for files, DOS doesn't. Therefore, to run programs you've stored in the root directory from other directories, you must add the root directory to your PATH definition.

Renaming directories in DOS 6

I know of several utility packages that can rename directories. However, I've heard that it's possible to rename directories in DOS 6 without using an external utility. If so, what command or built-in utility can rename directories?

> *Davis M. DeBard*
> *Hingham, Massachusetts*

DOS 6's new MOVE command, which allows you to move files among directories, also enables you to rename directories and subdirectories. To rename a directory, you simply type

```
C:\>move olddirname newdirname
```

where *olddirname* is the path of the directory you're renaming and *newdirname* is the new directory name. Once you use MOVE to rename a directory, you'll find that the files you stored under the old directory name are now stored in the new directory and that the old directory no longer exists.

For example, suppose your hard drive is divided into the directory structure

```
C:\
|----BATCH
|----DOS
|----GAMES
|----PERSONAL
|----WORK
```

and you want to change the name of the GAMES directory to EXTRAS. To do so, you type

```
C:\>move c:\games c:\extras
```

When you press [Enter] to execute the command, DOS responds

```
c:\games => c:\extras [ok]
```

If you now type

```
C:\>dir c:\extras
```

you'll get a listing of all the files and subdirectories that used to be stored in the GAMES directory. On the other hand, if you type

```
C:\>dir c:\games
```

you'll get a *File not found* error, since the GAMES directory no longer exists.

As you can see, DOS 6's new MOVE command is a handy tool for renaming directories. However, you should keep a few rules in mind when you use the command for this purpose:

- You must specify the complete directory path for the old directory name, as well as for the new one.

- You can't rename the current directory. You must first switch to a different directory by using the CD command.

- You can't use MOVE to change the location of a subdirectory. In other words, MOVE changes the name of a directory but keeps it under the original parent directory.

- You can rename a directory that isn't on the current drive. Just make sure you specify the correct drive in both the *olddirname* and *newdirname* variables.

For a practical example illustrating how and why you'd use the MOVE command to rename a directory, read "Disk Management: It's High Tech, but It's Still Housekeeping" on page 6. ■